



May/June 2015

Xplor

WARNING SIGNS

THESE CRITTERS USE COLORS
TO SHOUT "BACK OFF!"



CONTENTS

FEATURES

6 Warning Signs

These creatures use colors to keep predators away.

10 Nature's Gravediggers

American burying beetles have an interesting way of raising a family.

DEPARTMENTS

2 Get Out!

3 What Is It?

4 Into the Wild

16 Predator vs. Prey

17 Strange but True

18 How To

20 Xplor More



A zebra swallowtail
slips in for a sip of nectar.

by David Stonner



GOVERNOR

Jeremiah W. "Jay" Nixon

CONSERVATION COMMISSION

Don C. Bedell
James T. Blair, IV
Marilynn J. Bradford
David W. Murphy

DIRECTOR

Robert L. Ziehmer

XPLOR STAFF

Brett Dufur
Les Fortenberry
Karen Hudson
Regina Knauer
Angie Daly Morfeld
Noppadol Paothong
Marci Porter
Mark Raithe
Laura Scheuler
Matt Seek
David Stonner
Nichole LeClair Terrill
Stephanie Thurber
Cliff White

Xplor (ISSN 2151-8351) is published bimonthly. It is a publication of the Missouri Department of Conservation, 2901 West Truman Boulevard, Jefferson City, MO (Mailing address: PO Box 180, Jefferson City, MO 65102.) Subscription free to Missouri residents (one per household); out of state \$5 per year; out of country \$8 per year. Please allow 6–8 weeks for first issue. Notification of address change must include both old and new address (send mailing label with the subscriber number on it) with 60-day notice. Preferred periodical postage paid at Jefferson City, Missouri, and at additional entry offices. **Postmaster:** Send correspondence to *Xplor Circulation*, PO Box 180, Jefferson City, MO 65102-0180. Phone: 573-751-4115, ext. 3856 or 3249.

Copyright © 2015 by the Conservation Commission of the State of Missouri. Vol. 6, No. 3. May/June 2015 issue printed by RR Donnelley in April 2015 in Liberty, Missouri. Printed in the USA.

Send editorial comments to: **Mailing address:** *Xplor Magazine*, PO Box 180, Jefferson City, MO 65102-0180; **Email:** Xplor@mdc.mo.gov. **Please note:** *Xplor* does not accept unsolicited article queries, manuscripts, photographs, or artwork. Any unsolicited material sent will not be returned.

Equal opportunity to participate in and benefit from programs of the Missouri Department of Conservation is available to all individuals without regard to their race, color, national origin, sex, age, or disability. Questions should be directed to the Department of Conservation, PO Box 180, Jefferson City, MO 65102, 573-751-4115 (voice) or 800-735-2966 (TTY), or to the U.S. Fish and Wildlife Service Division of Federal Assistance, 4401 N. Fairfax Drive, Mail Stop: MBSP-4020, Arlington, VA 22203.



We recycle.
You can, too! Share
Xplor with friends.

Visit xplormo.org for cool videos, sounds, photos, fun facts, and more!



ON THE COVER

Bumblebee on a
gray-headed coneflower
by Norman Murray

GET OUT!

DON'T MISS THE CHANCE TO DISCOVER NATURE AT THESE FUN EVENTS



1

Snap a great outdoor photo at **NATURE PHOTOGRAPHY WORKSHOP**. Twin Pines Conservation Education Center in Winona. May 9, 10 a.m.–2 p.m. Register at 573-325-1381.



2

Reel in a keeper at **FISHING BASICS**. Rutledge Wilson Farm Park in Springfield. May 16, 9–11 a.m. Register at 417-895-6880.

3

Sculpt and paint your own decoy at **DUCK DECOY CARVING**. Cape Girardeau Conservation Nature Center. May 29, 6–10 p.m., and May 30, 8 a.m.–2 p.m. \$15 fee. Register at 573-290-5218.



4

Plink targets at **.22 RIFLE SHOOTING BASICS**. Andy Dalton Shooting Range and Outdoor Education Center near Springfield. June 6, 8:30–11:30 a.m. Register at 417-742-4361.



5

Learn bow basics at **ARCHERY DAY CAMP**. August A. Busch Shooting Range and Outdoor Education Center in St. Charles. June 24 and June 25, 8:30 to noon. Register at 636-441-4554.



Summer's aflutter and nature is on the move. Watch for these natural events around these dates.

MAY 1

Jack-in-the-pulpits bloom in woods.

MAY 10

Bobolink birds migrate from Argentina, and some nest in northern Missouri.

MAY 14

Watch for lightning bugs on warm evenings.

MAY 15

Baby deer, called fawns, are born now through late June.

MAY 24

Listen for the chorus of gray treefrogs.

JUNE 2

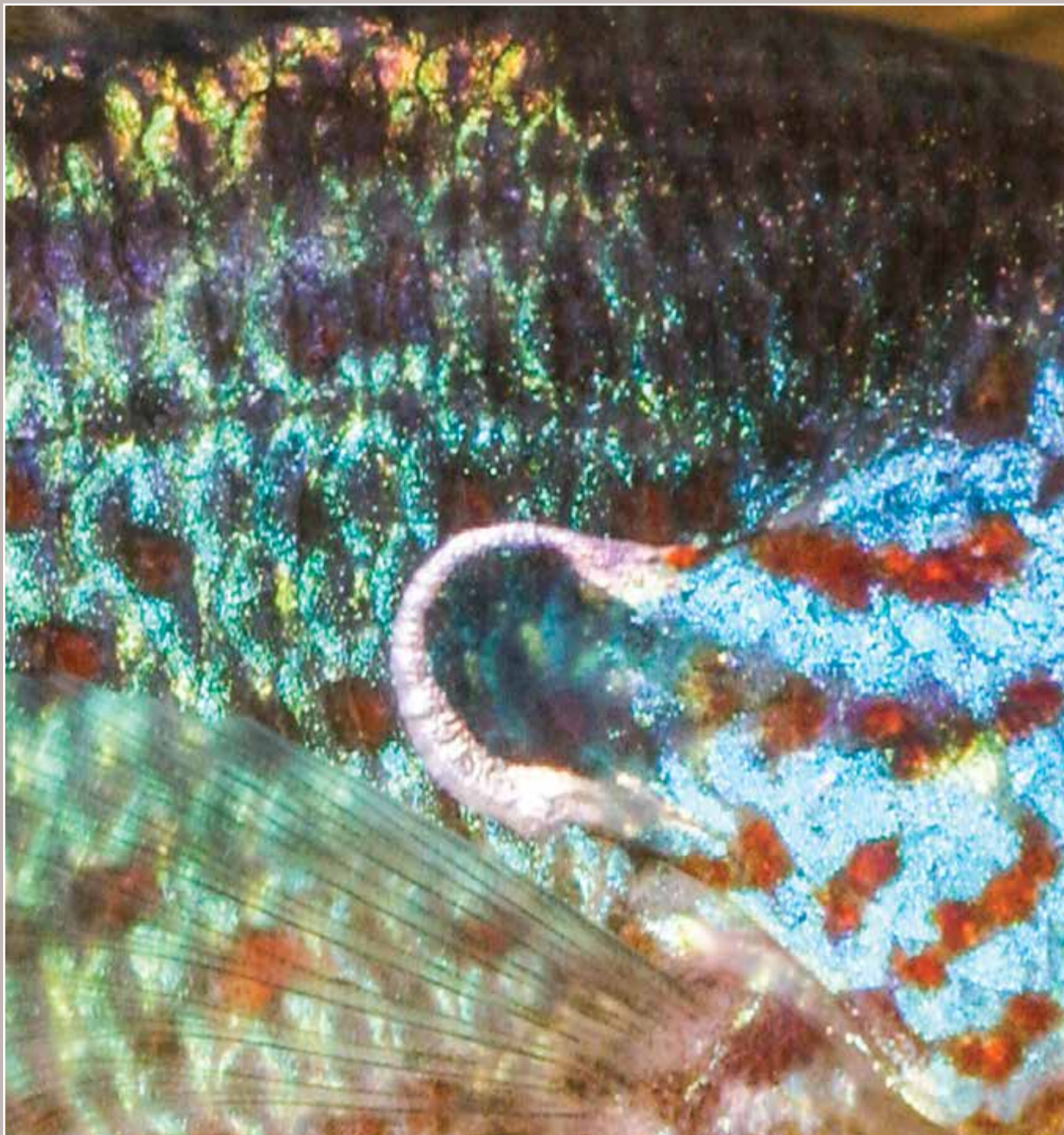
Look for tarantulas crossing roads in southwestern Missouri.

JUNE 20

American toad tadpoles turn into toadlets and leave the water.

WHAT IS IT?

DON'T KNOW?
Jump to Page 20 to find out.



- ① Just add water and sun, and I'm on the run.
- ② Some say I have a big mouth.

- ③ If you're fishing for a hint, I'm *fin*-ominal.
- ④ The biggest I get is 4 inches long.

Into the WILD glade

Dry, rocky glades are home to sun-loving plants and animals found nowhere else in Missouri. So lace up your boots, shoulder your pack, and head into the wild.



LOOK

The yellow-and-orange flowers of prickly pear cactuses are beautiful to behold. When the flowers fade, egg-shaped red fruits appear. The fruits, or pears, are edible — if you can get past the prickles.

Prickly pear cactus



Prairie dock



Prairie dock's toothed, heart-shaped leaves are as big as elephant ears, growing nearly a foot wide and 2 feet long. Rub one of the leaves between your fingers, and you'll find it feels as rough as sandpaper.

Take a Closer Look

Lichen grasshoppers are nearly invisible on rocks. But when they take flight, their orange wings give them away. Watch where one lands — it won't fly far — and approach slowly for a better look.



Lichen grasshopper

Where to Go

Glades are scattered throughout the Ozarks. Just look for rocky, treeless sites on the south or west side of hills. Or, visit these public areas, which are known for their spectacular glades.

- 1 Caney Mountain Conservation Area
- 2 Danville Conservation Area
- 3 Hughes Mountain Natural Area
- 4 Indian Trail Conservation Area
- 5 Taum Sauk Mountain State Park
- 6 Stegall Mountain at Peck Ranch Conservation Area
- 7 Valley View Glades Natural Area
- 8 White River Balds at Ruth and Paul Henning Conservation Area
- 9 Wildcat Glade Natural Area



Heads Up!

Glade plants and animals are adapted to hot, sunny conditions. Humans? Not so much. So slather on sunscreen, wear a hat, and bring plenty of water.

Listen

Only cartoon roadrunners go “beep, beep.” Real roadrunners make a soft cooing call that sounds like a dove. The leggy birds run better than they fly, hoofing it across southern Missouri’s glades at nearly 20 miles per hour. They use their speed to run down prey, such as lizards, snakes, and scorpions.

Greater roadrunner

Did You Know?

Collared lizards are Missouri’s fastest reptiles, reaching speeds of 15 miles per hour when chasing down prey such as grasshoppers or dashing away from predators such as roadrunners. When a lizard needs to scurry in a hurry, it stands upright to run on its hind legs, using its long tail for balance.

Collared lizard

Tarantula

After Dark

If you want to see Missouri’s hairiest — and some may say, scariest — spider, visit a glade after dark. Shine a flashlight on the rocky ground. If you’re lucky, you might spy a tarantula’s eyes shining back at you.

WARNING SIGNS

by Brett Dufur

Every day, colors move us. Green means *Go*. Red means *Whoa!*

Nature works the same way. Many critters use warning colors to tell predators: *Stop! I'm dangerous. I'm poisonous. I taste yucky.* Here are some creatures that use warning colors to shout it out.

BLACK AND WHITE STINKS

What's black with a white stripe? Exactly. The **striped skunk** is the easiest mammal to identify for a reason. Standing out is what skunks do best. That way, after a super-stinky blast of "back off," predators are sure to remember black and white means, "Mind your own business!"



RED MEANS YUCK

The **red milkweed beetle** is about as tasty as turnip ice cream. It's poisonous, too! Its bright red color is a warning to birds and other predators to stay away. This half-inch-long beetle gets its yuck factor from the milkweed plant, its only food source.



ORANGE MEANS ICKY

A **monarch**'s brilliant orange wings shout to birds, "Whoa!" As caterpillars, monarchs eat only milkweed, a poisonous plant that makes the caterpillars and the adult butterflies they turn into taste icky. In addition, the monarch's body is tough and rubbery. A bird can pinch it hard enough to find out it tastes gross, and the monarch can still fly away.



Viceroy butterflies stay alive by looking like their yucky-tasting cousin, the monarch.



WHITE MEANS WHOA

Goodness snakes! When alarmed, the **western cottonmouth** vibrates its tail and stretches its mouth out wide, showing the white lining. This defensive display warns predators not to come any closer.

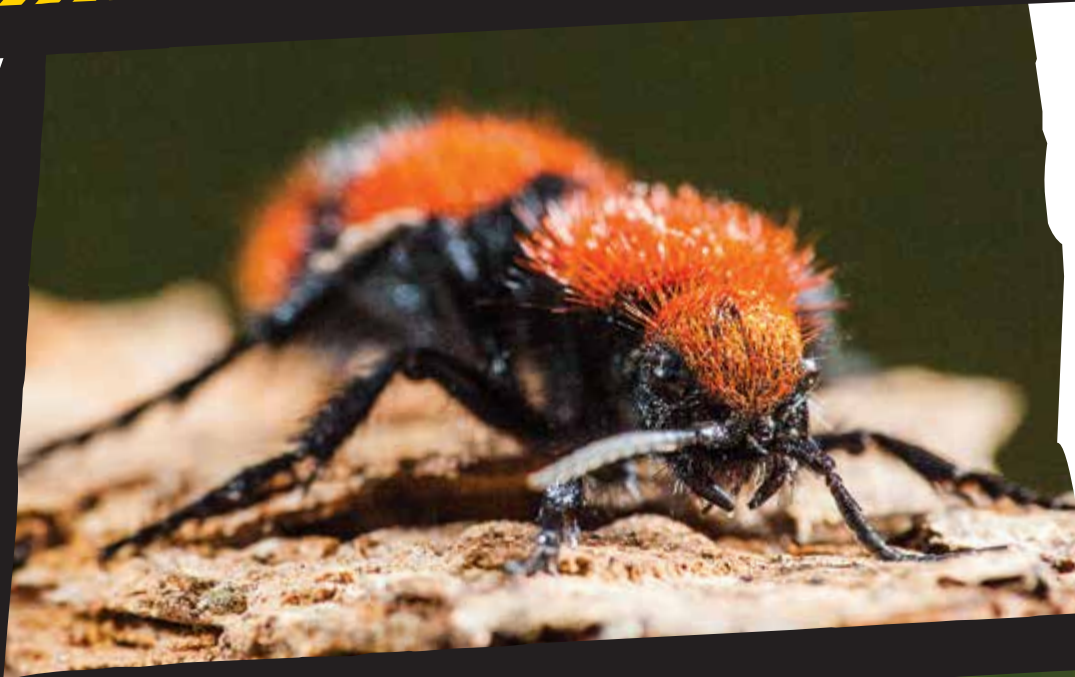


Steer
clear!
Observe
this venomous
snake from a
distance.

YELLOW AND BLACK – STAY BACK

The yellow and black stripes on a **bumblebee** mean “warning!” Queen and worker bumblebees can deliver painful stings. Bumblebees don’t go looking for a fight, though. They sting to defend their nest.





RED MEANS YEOW

Red means “stop,” and the **red velvet ant** is no exception. When threatened, these furry insects — which are wasps, not ants — can sting. The sting is so painful, some people call velvet ants cow killers.

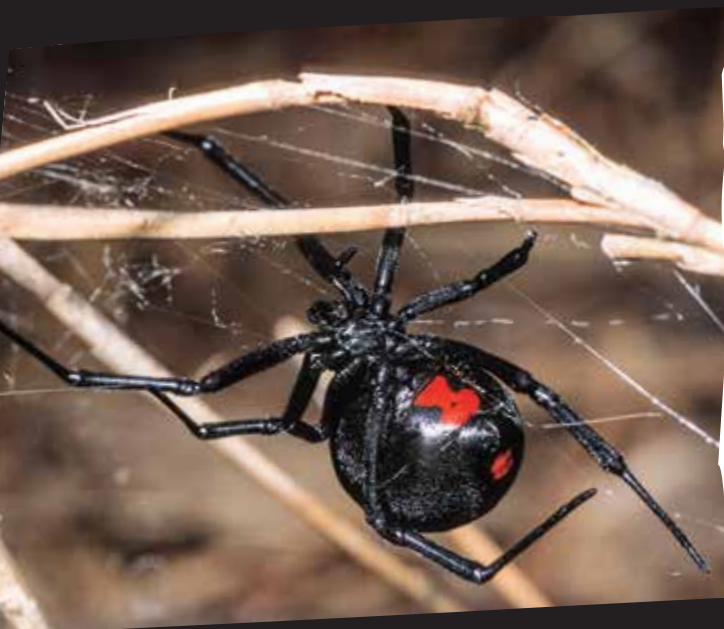
YOU WANT A PIECE OF ME?

Who’s gonna mess with this colorful caterpillar? Nobody! The hotdog-sized **hickory horned devil** is harmless, but what bird would be hungry enough to find out? Get too close and the devil lifts its head and swings its orange spines, like a boxer warming up for a knockout. Acting more dangerous than it really is gives this caterpillar a leg up on survival.



SPIDER SIGNAL

The red hourglass on the bottom of the venomous **black widow** signals “stay away!” These spiders are shy and rarely bite, but by carrying its own warning sign, the black widow has become one of the most well-known spiders in the world.



Nature's Gravediggers

by Matt Seek
artwork by Dave Besenger

This isn't your typical love story. It's about two beetles who meet on a starry summer night, hit it off, and settle down to raise a family. It's a happy story really, but it isn't for the faint of heart. It begins, you see, with an end.

Don't worry about why the quail died — after all, our story isn't about a bird. What matters is that just hours after the quail passed, a thumb-sized beetle arrived, appearing like a ghost from the darkness. It was an American burying beetle, and she had used her sensitive antennae to follow the whiff of death nearly two miles through the moonlight.





Dead Meat

Let's get this tidbit out of the way: Burying beetles eat dead, rotting animals. Mouse-sized morsels are eaten on the spot. Larger corpses — like the quail in our tale — are used for something else.

Beetle Battle

When more than one beetle arrives at a corpse, they fight to see who claims it. Our story is no different. The female had just folded her wings when she heard the clicking and scraping of two male beetles locked in battle. The males pushed and shoved, their clawed legs kicking up tiny puffs of dust, until eventually — as is usually the case — the larger beetle won.





Through a series of six-legged bench presses, the burying beetles scooted the quail to softer soil.



The Big Move

The beetles' courtship was short, and they soon began working on a home for their future family. Unfortunately, the quail had died on a hard piece of ground and had to be moved. So, the beetles rolled onto their backs, wiggled underneath the carcass, and used their legs to push it forward. When one beetle slid the bird off its body, it ran to the front to take over for its partner. Millimeter by millimeter, the pair scooted the quail to softer soil. Burying beetles can move carcasses that weigh 200 times more than they do. To perform a similar feat, you'd have to lift a small school bus.



Race to the Grave

It now became a race against time. Night was patrolled by an army of thieves — raccoons, opossums, foxes, and coyotes. Sunrise would bring scavenging vultures and squadrons of flies. The longer the quail lay exposed, the greater the chance it would be snatched away. So the beetles did what burying beetles do best: They started digging.

Both beetles squeezed underneath the body and began using their flat, hard heads to loosen the soil and push it out from under the quail. Small rocks were thrust aside. Roots were chewed in two. Bit by bit the soil beneath the quail was bulldozed away, and inch by inch the quail sank into a shallow grave. On average, American burying beetles sink their carcasses about 9 inches underground. Some go-getters dig down a foot or farther. This is no easy feat. If you think it is, try burying a minivan in a single night using nothing except your hands.

With the quail safely underground, the beetles began snipping off its feathers, using their strong jaw muscles and sharp pincers. In short order, the quail was as bare as a plucked chicken.

Making a Meatball

Working together, the beetles rolled the quail into a tight ball. Then they coated the corpse with a gooey liquid from their mouths and backsides. The goo helped slow the decay of the carcass, keeping their meatball “fresh.” The female beetle scooped out a small chamber above the meatball and laid her eggs.

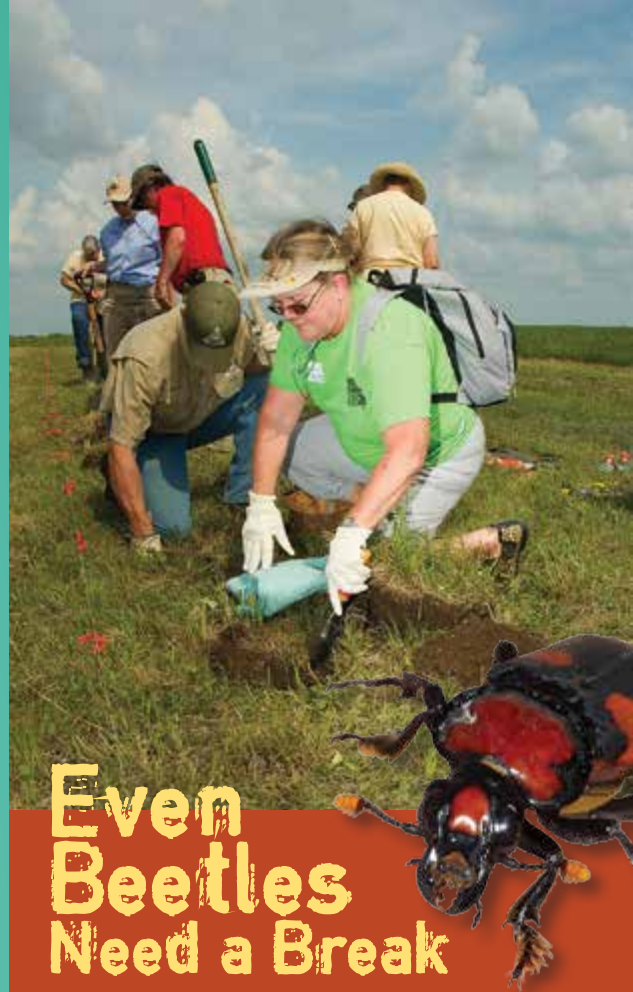


From Grave to Cradle

Four days later, 15 squiggly white grubs hatched. It's rare for an insect to care for its young. It's even rarer for both parents to pitch in. But burying beetles, as you might have guessed, aren't ordinary insects.

Now you may want to hold off on that sandwich for this next part. Every so often, one of the adults would make a squeaky noise by rubbing its wing covers against its abdomen. This signaled to the babies that it was mealtime. To feed the hungry youngsters, the parents ate flesh from the meatball and then, like a mother bird feeding her chicks, regurgitated (threw up) into the waiting mouths of the babies.

Family life continued for about two weeks, until the quail was nothing but bones. Then, the adults tunneled out of the nursery and flew away. When frosts arrived, they would die. The babies burrowed farther into the soil. In late summer they would emerge as adults, snack on dead things for a few weeks, and then tunnel underground to spend winter. In spring the beetles would reappear to start a new chapter in the story of nature's tiny gravediggers.



Even Beetles Need a Break

Our story had a happy ending, but the real outlook for burying beetles isn't so rosy. A hundred years ago, American burying beetles were found in 35 states, including Missouri. Today, wild populations exist in only six, and Missouri isn't one of them.

The Saint Louis Zoo, The Nature Conservancy, the U.S. Fish and Wildlife Service, and the Conservation Department are hoping to change that. Adult beetles reared at the zoo are being released at Wah'Kon-Tah Prairie, north of El Dorado Springs. Pairs of beetles, a male and female, are placed in holes containing a dead quail. Biologists cover the hole with soil and return in 10 days to see if babies were produced. The hope is that someday more than 1,000 of these interesting little gravediggers will live at Wah'Kon-Tah.

THIS
ISSUE:

DRAGONFLY NYMPH VS TREEFROG TADPOLE

Illustrated by David Besenger

Booster Rocket

3, 2, 1, takeoff!
Dragonfly nymphs rocket forward on jets of water shot out of their bottoms. Oddly enough, their breathing gills are also located where the sun doesn't shine.

Underwater Assassins

Long before dragonflies take to the skies, baby dragonflies (called nymphs) slowly develop underwater. During this early life stage, dragonflies are one of nature's underwater assassins with killer skills and fantastical body parts.

Bigger, Faster

Tadpoles grow bigger tails when the water's full of critters that are trying to eat them. They swim faster, and the bigger tails lure bites away from their head and body.

Red Means Stop

Cope's gray treefrog tadpoles develop red tails to try to slow down dragonfly nymphs in pursuit — a last-ditch effort to stay alive by signaling, "Don't eat me! I don't taste good."

Flying Face Harpoon

Whack! The dragonfly can shoot its alien-looking lower jaw forward in a flash. It does this by boosting the pressure inside its body in the same way you puff out your cheeks.

AND THE WINNER IS...

What could be faster than a tadpole toodling through the water? Whack! The big tadpole's speed, strength, and slippery skeddadle couldn't outrun and outwriggle the dragonfly nymph's ninja-like nabbers.

STRANGE but TRUE!

YOUR GUIDE TO ALL THE
UNUSUAL, UNIQUE,
AND UNBELIEVABLE STUFF
THAT GOES ON IN NATURE

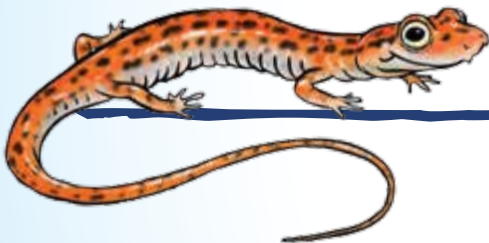


When they run out of food in one location, **DIFFERENTIAL GRASSHOPPERS** may travel nearly 10 miles to search for more. Airplane pilots have spotted the hungry, wayward insects flying 1,400 feet up in the sky.

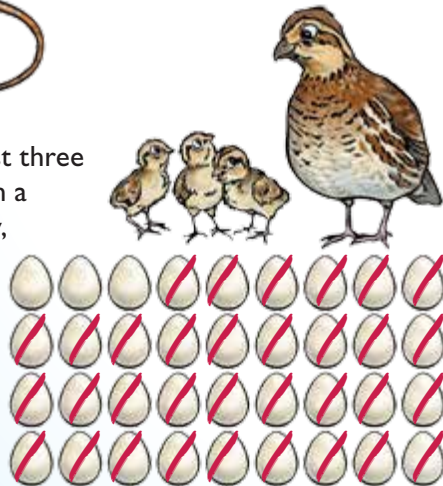
Geronimo! Mama **WOOD DUCKS** nest in holes high up in trees. A day after hatching, her babies follow mom to the entrance of the hole and bail out. The little fluffballs can fall more than 250 feet onto hard ground without being injured.



Who needs lungs? **CAVE SALAMANDERS** and other members of the lungless salamander family breathe through their skin. They must keep their skin moist, however, so the little amphibians don't stray far from damp areas.



A mother **BOBWHITE** may nest three times and lay 36 eggs in a summer. Unfortunately, her chicks are like walking cheese puffs to predators. On average, only three of her chicks will live to see their first birthdays.

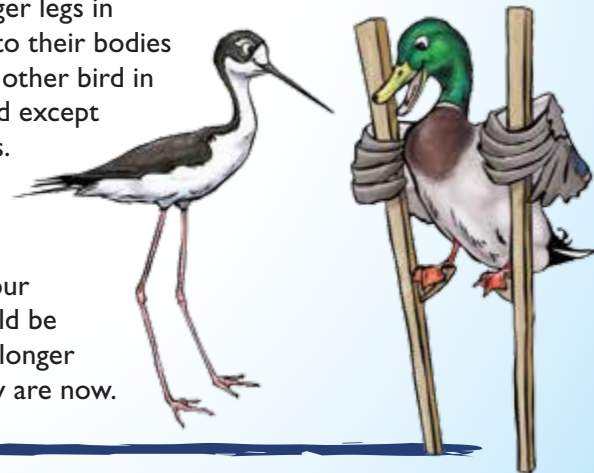


Little stinker: **STRIPED SKUNK** kits can spray at birth, but the blind, helpless babies have little control over where their funk flies. By the time they're 3 months old, the kits can aim accurately and fire at will.



BLACK-NECKED STILTS

have longer legs in relation to their bodies than any other bird in the world except flamingos. If you were built like a stilt, your legs would be 8 inches longer than they are now.



Male **BLUEGILLS** use their tail fins to sweep out saucer-shaped nests in shallow water at the edges of ponds and lakes. The bully bluegills guard their nests fiercely, chasing away fish much bigger than themselves, including bass and catfish.

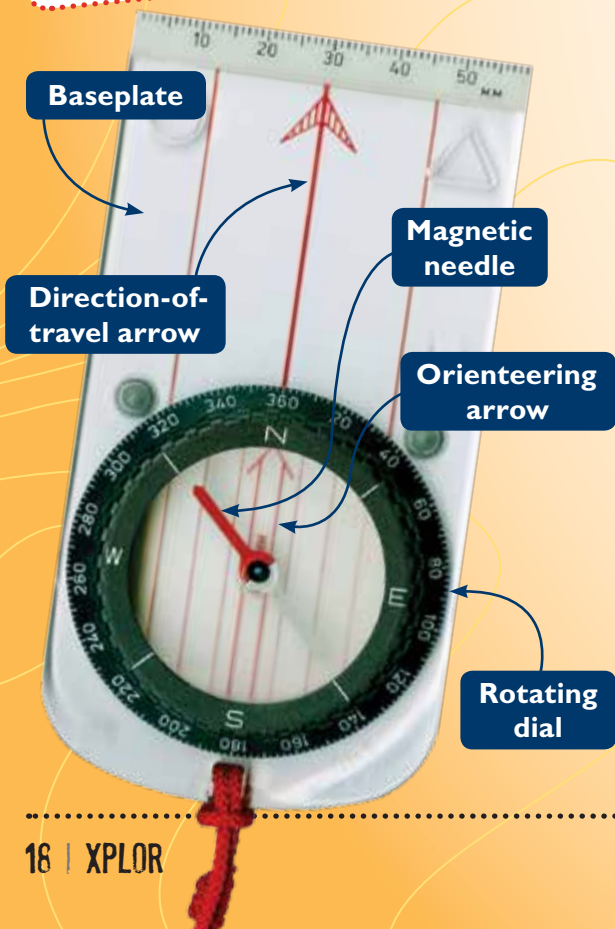


HOW TO

Use a Map and Compass

What happens when the batteries conk out on your GPS? If you know how to use a map and compass, you have nothing to worry about.

ANATOMY OF A COMPASS



ORIENTING A MAP

Once you're familiar with the map's symbols, you need to turn your topo so that north on the map points to north in the real world. Then you can match landmarks on the map to real ones on the landscape.

1

Hold the map flat or place it on the ground.

2

Twist the rotating dial of your compass so that "0" or "N" lines up with the bottom of the direction-of-travel arrow. The orienteering arrow should now be pointing in the same direction as the direction of travel arrow.

Most maps are drawn so that north is at the top of the page.

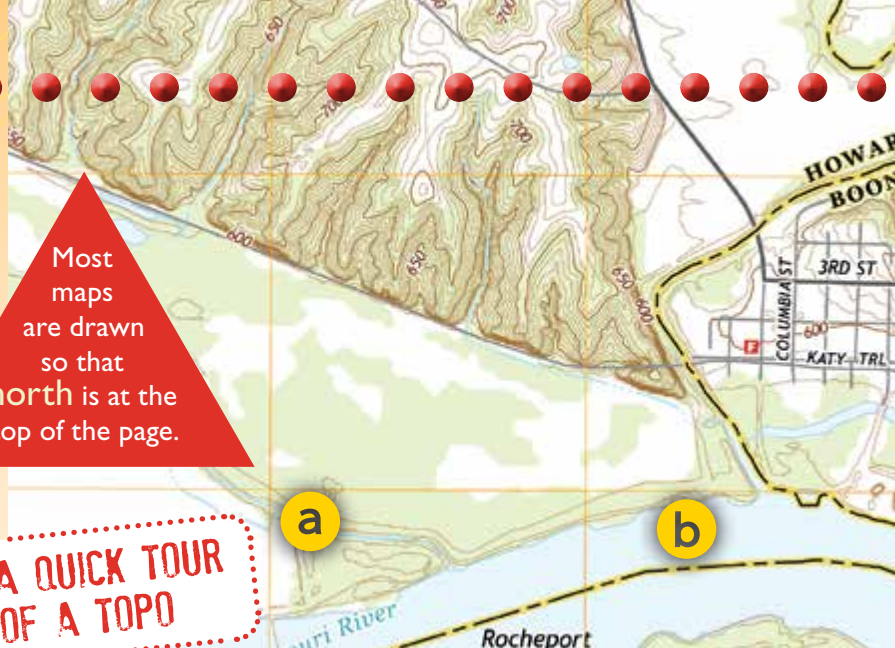
A QUICK TOUR OF A TOPO

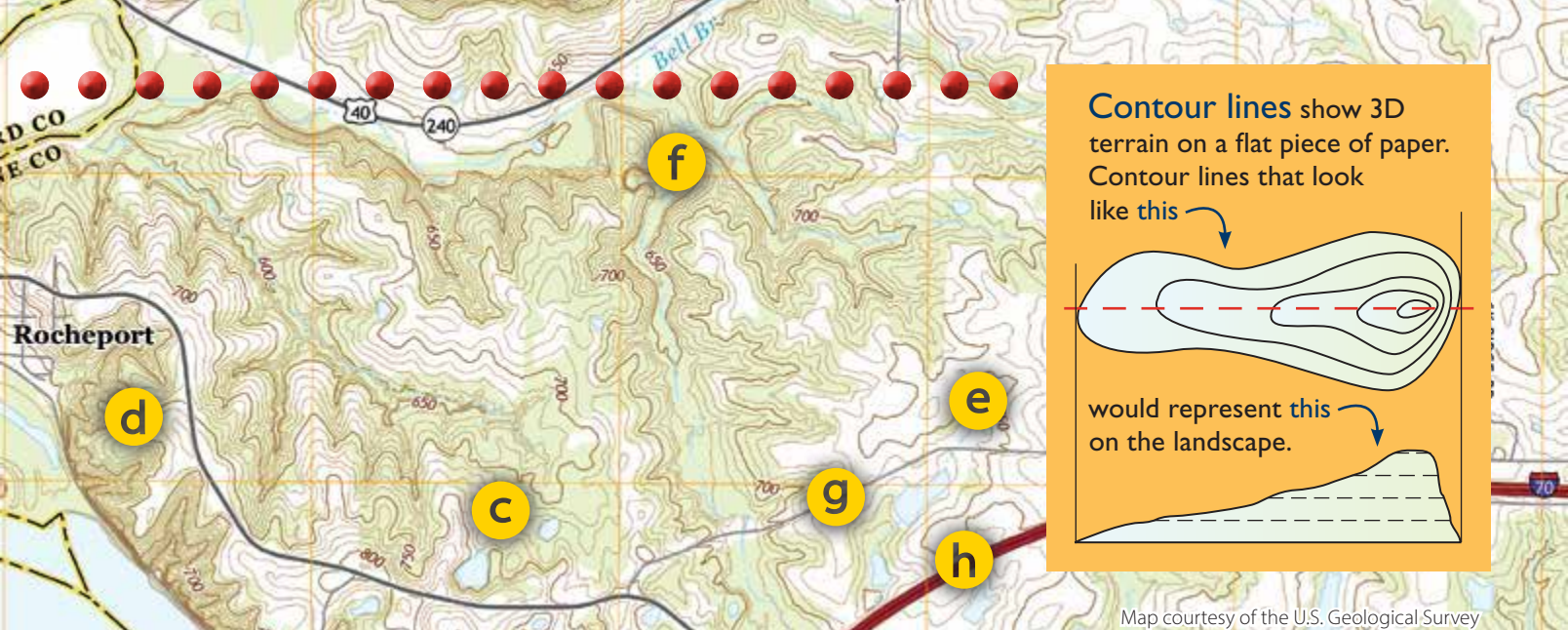
Topographic maps, or "topos," are the best maps for finding your way in wild places. Learning what the symbols, colors, and squiggly lines mean is the first step in using a topo. To download a free map of the area you plan to explore, visit store.usgs.gov.

a Skinny blue lines represent small streams.

b Wide blue lines represent large rivers.

c Blue circular shapes represent ponds and lakes.





d Squiggly brown lines, called contour lines, show the shape of the Earth's surface. The closer the lines are to each other, the steeper the terrain.

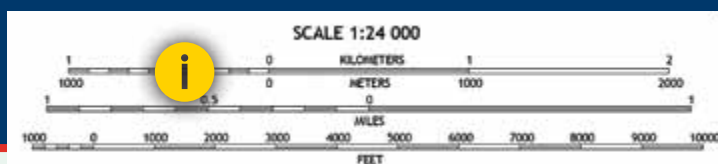
e White or tan shading represents sparse vegetation.

f Green shading represents thick vegetation such as forests.

g Black or gray lines show minor roads.

h Red lines show major roads or highways.

i The **scale** shows the relationship between a measurement on the map and the actual distance on the ground.



3 Place your compass on the map so that the long edge of the baseplate lines up with the east or west edge of the map. Make sure the direction-of-travel arrow points to the top of the map (the north side).

4 Turn the map and compass together until the red end of the magnetic needle is between the sides of the orienteering arrow. This is called "boxing the needle" or "putting red in the shed."

North on the map now points to magnetic north in the real world. Features on the map should closely match those on the landscape.

XPLOR MOR

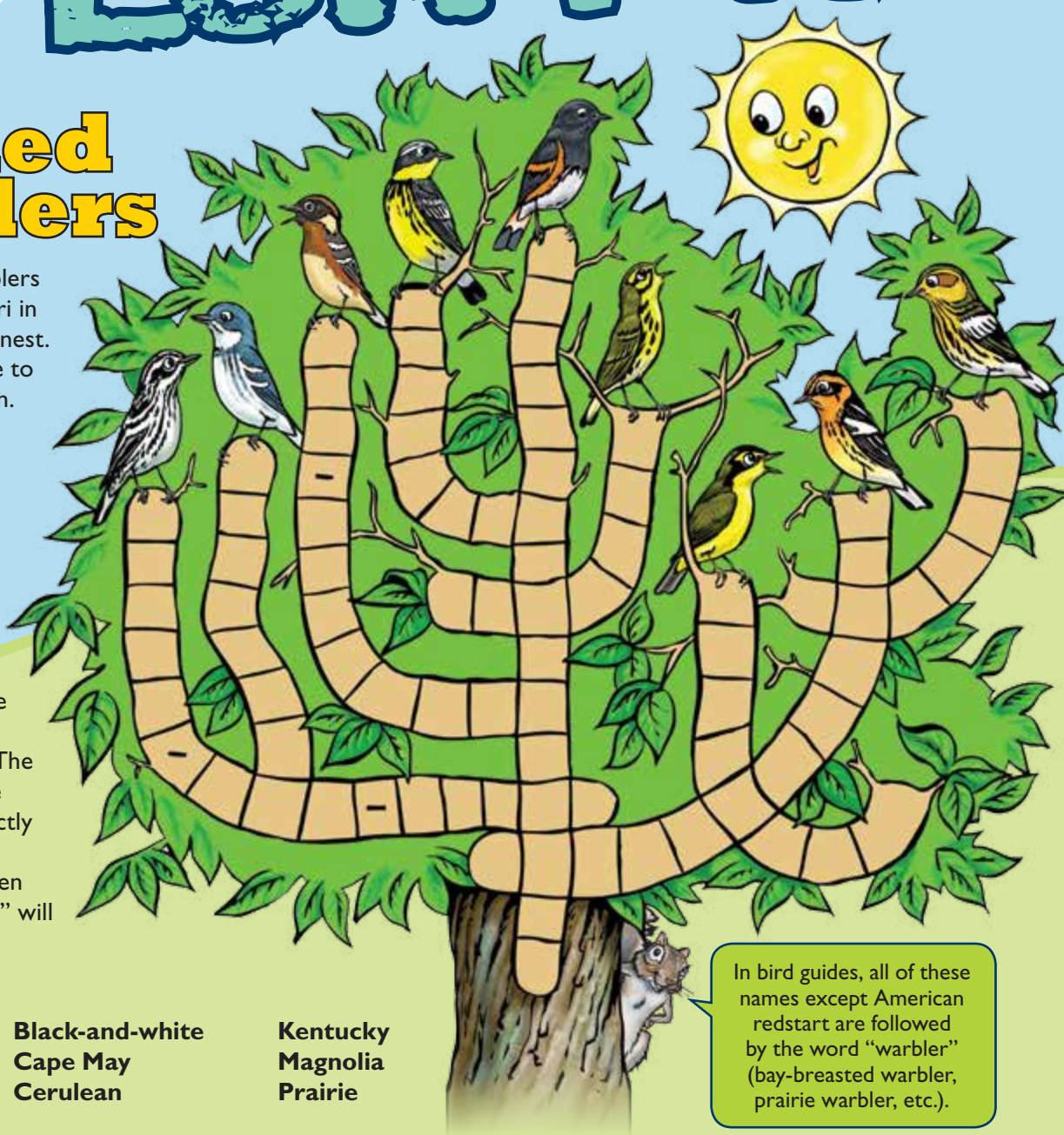
Garbled Warblers

Nearly 40 kinds of warblers wander through Missouri in May. Some stay here to nest. Others grab a quick bite to eat and keep flying north. Woodlands throughout the state serve as “gas stations” where these colorful, insect-eating birds refuel for their long, nighttime flights. Learn what a few of Missouri’s warblers look like by matching the bird’s name from the list below to the branch on which it is perched. The first letter of each name will be in the space directly below the bird. Spaces between words have been removed, so “Cape May” will be written “CapeMay.”

American redstart
Bay-breasted
Blackburnian

Black-and-white
Cape May
Cerulean

Kentucky
Magnolia
Prairie



In bird guides, all of these names except American redstart are followed by the word “warbler” (bay-breasted warbler, prairie warbler, etc.).

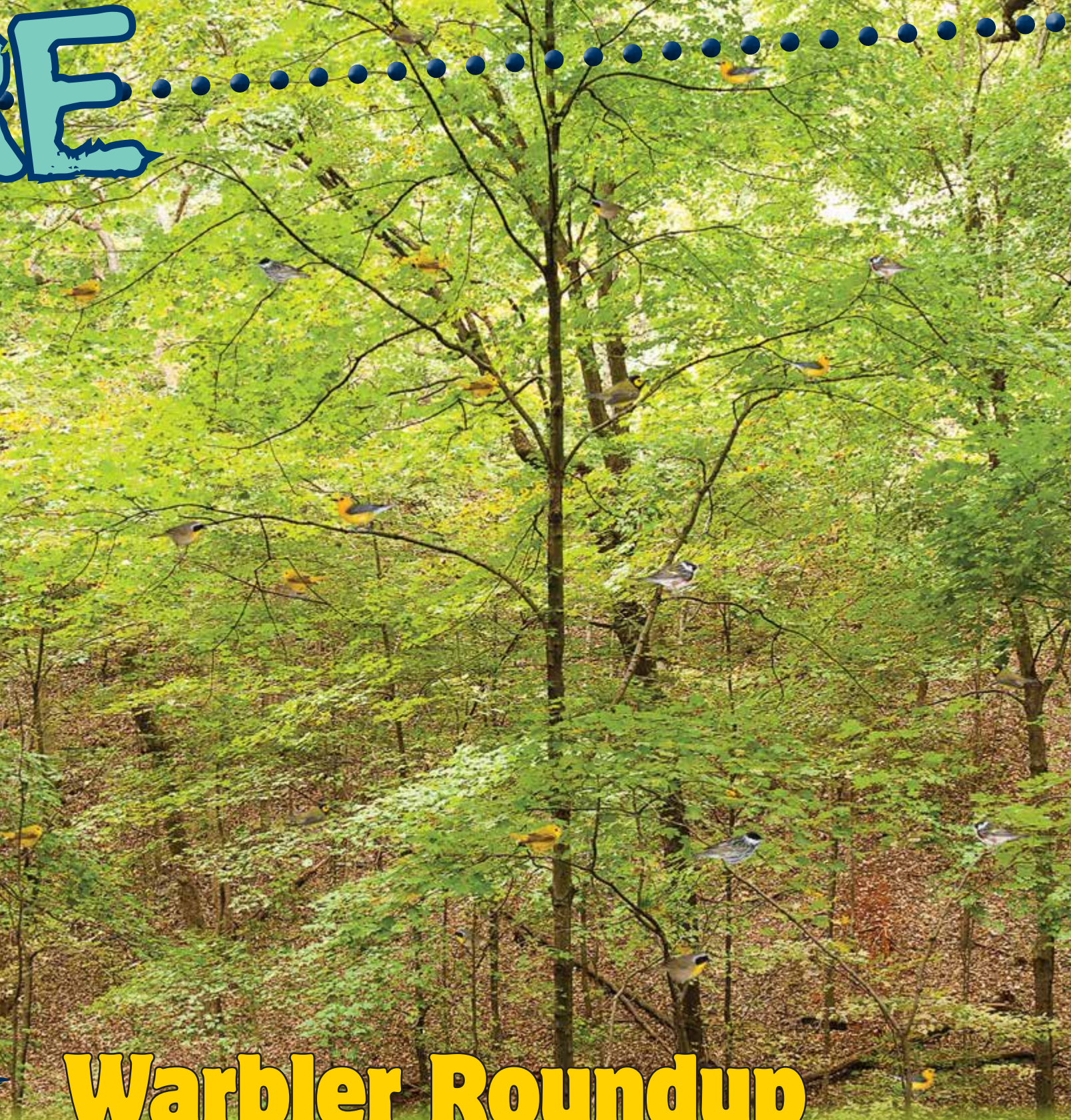
WHAT IS IT?

— FROM PAGE 3 —

a year, it’s only as big as your thumb. It’s a feisty little fish, so you’ll still have fun reeling one in. You might think you landed a baby fish, but you may be eye to eye with a full-grown orangespotted sunfish.



E



Warbler Roundup

The trees in this forest are heavy with warblers. How many of each kind can you find?



Blackpoll
Warbler



Chestnut-sided
Warbler



Common
Yellowthroat



Hooded
Warbler



Prothonotary
Warbler



Yellow
Warbler

Warbler photos by Scott Whittle and Tom Stephenson reprinted from *The Warbler Guide*.
 Answer: 2 Blackpoll, 3 Chestnut-sided, 4 Common yellowthroat, 4 Hooded, 4 Prothonotary, 6 Yellow

SUBSCRIBE ONLINE

xplormo.org/node/2618

FREE TO MISSOURI HOUSEHOLDS

CRITTER CORNER

Least Bittern



This recently hatched fuzzball is a least bittern, still covered in downy feathers. Least bitterns are Missouri's smallest herons, measuring only a foot long when fully grown. Listen for this secretive bird's soft *coo-coo-coo-coo* at dawn and dusk. Look for them among the cattails, where they hunt for frogs, tadpoles, and insects. When spotted, a least bittern will "hide" by freezing, squeezing in its feathers, and pointing its bill straight up.